



Pathology and Medical Education

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Students entering medical school usually recognize the role of forensic pathologists like Quincy of TV fame, but have a vague or nebulous perception of what pathology really is. Students are more aware of clinical specialties like family practice, surgery, pediatrics, obstetrics and gynecology, psychiatry and medicine. They also understand that they must master basic science disciplines like anatomy, biochemistry, physiology and pharmacology to become physicians. Somehow pathology remains more elusive. Even so, students often become enthusiastic and excited when they see the vital role that pathology plays in understanding disease. As teachers such enthusiasm is not only refreshing but inspirational in showing my students how interesting and dynamic the study of disease can be.

Pathology is a basic discipline that is an essential part of the broad educational experience that every medical graduate receives. Pathology is the scientific study of the nature of disease and its causes, processes, development and consequences. Pathology is a core discipline in the educational experience of every physician. Before medical students can truly understand what they need to know to be good physicians, they must understand the nature of disease.

To appreciate how pathology is taught today, past accomplishments need to be reviewed. Virchow's *Cellularpathologie* (1858) marked the beginning of modern pathology and revolutionized the approach and understanding of disease. Virchow regarded the body as a cell-state in which every cell is a citizen, and disease as a civil war brought about by external forces among the cells. His understanding explained the evolution of a particular disease. For example, he proposed that a Charcot (neuropathic) joint was due to repeated episodes of minor trauma to joints that were unprotected by the pain response. With continued damage and inadequate repair, a Charcot joint evolved. Virchow's approach was the beginning of integrating the available scientific information regarding anatomy and physiology to understand a particular disease process.

Standard textbooks of pathology remained largely descriptive and often did not explain the dynamics of disease processes. Dr. Stanley Robbins, a master teacher and pathologist, recognized this deficiency and believed that medical students needed to know how diseases began and progressed. He understood that basic pathophysiology was a meaningful way to approach the understanding of disease. In 1957 he published his first textbook entitled, *Textbook of Pathology, with clinical applications* to correct this deficiency. Dr. Robbins recognized that descriptions of disease were often uninspiring, not very interesting, and failed to explain the natural history of disease. His chatty writing style and prose peppered with light-hearted asides, made the study of diseases come alive for subsequent generations of

medical students. He made understanding of disease practical and useful by emphasizing the mechanisms that underlie illnesses.

In 1979, Ramzi Cotran and in 1984, Vinay Kumar joined Dr. Robbins to produce the premier textbook of pathology currently used worldwide. With the passing of Stanley Robbins at age 88 in 2003 and Ramzi Cotran at the age of 67 in 1999, Vinay Kumar was left to carry on Dr. Robbins' legacy. Vinay Kumar, with new coauthors Abul K. Abbas and Nelson Fausto, all former colleagues of Dr. Stanley Robbins, recently published the 7th edition of "*Robbins and Cotran Pathologic Basis of Disease*". Review of this new edition indicates that Dr. Robbins' legacy, as one of medicine's great teachers, will endure. This edition, like previous editions, is written for medical students and remains the premier textbook for medical students. This edition will be treasured by medical students as much today as it was in the past. This textbook, like previous editions, will also be invaluable to upper level medical students, clinical residents and practicing physicians.

At John A. Burns School of Medicine (JABSOM), the student's didactic experiences are coupled with practical applications that use a variety of methods and materials. The Robbins and Cotran textbook is recommended for the study of disease. This book emphasizes clinical correlations and the pathophysiology of disease. Such an approach integrates many disciplines and includes particularly anatomy, physiology, biochemistry, microbiology, cell and molecular biology, genetics and pharmacology. Such integration is helpful to students doing Problem Based Learning (PBL). Actual clinical specimens, standard x-rays and CT and MRI scans are used. Since modern imaging techniques make it feasible to see inside the body, the abnormalities seen by imaging with their gross and microscopic appearance are shown. Students can correlate a particular pathologic abnormality with its image appearance. Obviously a student must understand the diseases and their natural history to make these correlations. The combination of such didactic and practical experience provides every student with the fundamentals to understand and recognize the diseases that afflict man.

Finally, JABSOM's educational approach introduces students to diseases and pathologic processes that they are likely to encounter in Hawaii and particularly those disorders that complement the health care problems in the PBL curriculum. The epidemiology of disease becomes a key basis for such study. The unique aspects of diseases that apply to Hawaii are included, for example, eosinophilic meningitis is caused by *Angiostrongylus cantonensis*, and the prevalence of diseases like diabetes mellitus and hyperuricemia among Polynesian populations.

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JABSOM's experience over the past 15 years indicates that the PBL curriculum makes integration of the basic understanding of pathology a natural and vital part of every case and, in turn, of every student's basic medical education. Student performance on the National Board of Medical Examiners Step 1 examinations has consistently been at or above the national average. This teaching approach is well received by most students. Nearly five percent, about double the national average, of JABSOM's graduates have sought residency training in pathology. Graduates of JABSOM and/or the Hawaii Pathology Residency Program now comprise more than half of the practicing pathologists in Hawaii.

In summary, pathology remains an essential and valuable component of every physician's education. The teaching approach used by the faculty in the Department of Pathology at JABSOM really prepares all graduates for future practice in any specialty they may choose.

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